

MODIFIED VIRGINIA CODING SYSTEM
for Erosion and Sediment Control Practices

REFER TO THIS SHEET FOR DETAILS OF IMPLEMENTED MEASURES

NO.	TITLE	KEY	SYMBOL
3.01	SAFETY FENCE	SAF	
3.02	TEMPORARY GRAVEL CONSTRUCTION ENTRANCE STABILIZATION	CE	
3.03	STRAW BALE BARRIER	STB	
3.04	SILT FENCE	SF	
3.05	BRUSH BARRIER	BB	
3.06	STORM DRAIN INLET PROTECTION	IP	
3.07	CULVERT INLET PROTECTION	CIP	
3.08	TEMPORARY DIVERSION DIKE	DD	
3.09	TEMPORARY FILL DIVERSION	FD	
3.10	TEMPORARY RIGHT-OF-WAY DIVERSION	RWD	
3.11	DIVERSION	DV	
3.12	TEMPORARY SEDIMENT TRAP	ST	
3.13	TEMPORARY SEDIMENT BASIN	SB	
3.14	TEMPORARY SLOPE DRAIN	TS	
3.15	PAVED FLUME	PF	
3.16	STORMWATER CONVEYANCE CHANNEL	SCC	
3.17	OUTLET PROTECTION	OP	
3.18	RIPRAP	RR	
3.19	ROCK CHECK DAMS	CD	
3.20	LEVEL SPREADER	LS	
3.21	VEGETATIVE STREAMBANK STABILIZATION	VSS	
3.22	STRUCTURAL STREAMBANK STABILIZATION	SSS	
3.23	TEMPORARY VEHICULAR STREAM CROSSING	VSC	
3.24	UTILITY STREAM CROSSING	USC	
3.25	DEWATERING STRUCTURE	DS	
3.26	TURBIDITY CURTAIN	TC	
3.27	SUBSURFACE DRAIN	SD	
3.28	SURFACE ROUGHENING	SR	
3.29	TOPSOILING	TO	
3.30	TEMPORARY SEEDING	TS	
3.31	PERMANENT SEEDING	PS	
3.32	SODDING	SO	
3.33	BERMUDA GRASS AND ZOYSIA GRASS ESTABLISHMENT	BG	
3.34	MULCHING	MU	
3.35	SOIL STABILIZATION BLANKETS AND MATTING TREES, SHRUBS, VINES AND GROUND COVERS	BE	
3.36	TREE PRESERVATION AND PROTECTION	TP	
3.37	DUST CONTROL	DC	

GENERAL EROSION AND SEDIMENT CONTROL NOTES:
(AS TAKEN FROM TABLE 6-1 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK)

- ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS
- ES-2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE- CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.
- ES-3: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.
- ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
- ES-5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
- ES-6: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.
- ES-7: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
- ES-8: DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
- ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUN-OFF PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

ADDITIONAL EROSION AND SEDIMENT CONTROL NOTES

- 1) IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO LEAVE THE SITE ADEQUATELY PROTECTED AGAINST EROSION, SEDIMENTATION, OR ANY DAMAGE TO ANY ADJACENT PROPERTY AT THE END OF EACH DAYS WORK.
- 2) FOR THE EROSION CONTROL KEY SYMBOLS SHOWN ON THE PLANS, REFER TO THE VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, THIRD EDITION.
- 3) NO MORE THAN 500 FEET OF UTILITY TRENCH MAY BE OPEN AT ANY TIME. ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF THE TRENCH.
- 4) THE METHOD OF SEDIMENT REMOVAL FROM TRENCH DEWATERING OPERATIONS SHALL BE APPROVED THE BY THE CITY OF ROANOKE PRIOR TO BEGINNING SAID OPERATIONS.
- 5) TEMPORARY EROSION CONTROL MEASURES, NO LONGER NEEDED, SHALL BE REMOVED WITHIN 30 DAYS.

SOIL EROSION NARRATIVE

PROJECT DESCRIPTION:
THE PURPOSE OF THIS PROJECT IS THE INSTALLATION OF APPROXIMATELY 1,000 LINEAR FEET OF NEW SANITARY SEWER. THE PROJECT SITE IS IN THE VICINITY OF THE NEW CARILION FACILITIES ALONG S. JEFFERSON STREET AND THE FORMER MENNEL MILL SITE.

EXISTING SITE CONDITIONS:
THE PROJECT SITE IS WITHIN THE RIGHT-OF-WAY OF RIVERSIDE CIRCLE AND S. JEFFERSON STREET. THERE WILL BE ONE OPEN-CUT STREET CROSSING. THE REMAINDER OF THE PROJECT AREA IS IN THE GRASS AREAS BEHIND THE CURB ALONG THE STREET.

ADJACENT PROPERTY:
ADJACENT PROPERTIES ARE PROPERTIES OWNED BY CARILION SERVICES, INC. THE MAJORITY OF THE ALIGNMENT IS ALONG THE FORMER MENNEL MILL SITE.

OFF-SITE AREAS:
NO OFF-SITE AREAS ARE ANTICIPATED FOR THIS CONSTRUCTION. ANY OFF-SITE AREA WHICH BECOMES NECESSARY SHALL BE PROVIDED TO THE CITY OF ROANOKE. AN EROSION AND SEDIMENT CONTROL PLAN MAY BE REQUIRED FOR THOSE SITES.

SOILS:
SOILS ARE IDENTIFIED IN THE USDA 'SOIL SURVEY OF ROANOKE COUNTY AND THE CITIES OF ROANOKE AND SALEM, VIRGINIA' AS "WHEELING-URBAN LAND COMPLEX".

CRITICAL AREAS:
THE POTENTIAL FOR RUNOFF FROM THIS SITE IS VERY LIMITED DUE TO THE NATURE OF THE CONSTRUCTION. STORM DRAIN INLETS ALONG THE ALIGNMENT WILL RECEIVE INLET PROTECTION. SILT FENCE IS INDICATED ALONG THE BACK OF CURB WHICH WILL PREVENT SEDIMENT FROM ENTERING THE STREET.

EROSION CONTROL MEASURES:
UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE 'VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK', THIRD EDITION.

- A. PLACEMENT OF EROSION CONTROL MEASURES SHALL BE PRIOR TO BEGINNING OF CONSTRUCTION OPERATIONS AS FAR AS PRACTICAL.
- B. IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL.
- SILT FENCES AND INLET/OUTLET PROTECTIONS SHALL BE CHECKED REGULARLY FOR UNDERMINING AND SEDIMENT BUILDUP.

PERMANENT STABILIZATION:
ALL DISTURBED AREAS SHALL BE PERMANENTLY SEEDING IN ACCORDANCE WITH SPECIFICATIONS PROVIDED HEREIN.

STORMWATER RUNOFF:
RUNOFF FROM THE SITE WILL FLOW DIRECTLY OVERLAND TO EXISTING INLETS ON S. JEFFERSON STREET.

CALCULATIONS:
NO SITE CALCULATIONS ARE REQUIRED FOR THIS PROJECT.

EROSION CONTROL MEASURES:
3.05 SILT FENCE
3.07 STORM DRAIN INLET PROTECTION
3.31 TEMPORARY SEEDING
3.32 PERMANENT SEEDING

TOTAL DISTURBED AREA: 0.14 AC.

4VAC50-30-40 Minimum Standards

An erosion and sediment control program adopted by a district or locality must be consistent with the following criteria, techniques and methods:

- Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Temporary soil stabilization shall be applied within seven days to denuded areas that may not be at final grade but will remain dormant for longer than 30 days. Permanent stabilization shall be applied to areas that are to be left dormant for more than one year.
- During construction of the project, soil stock piles and borrow areas shall be stabilized or protected with sediment trapping measures. The applicant is responsible for the temporary protection and permanent stabilization of all soil stockpiles on site as well as borrow areas and soil intentionally transported from the project site.
- A permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized. Permanent vegetation shall not be considered established until a ground cover is achieved that is uniform, mature enough to survive and will inhibit erosion.
- Sediment basins and traps, perimeter dikes, sediment barriers and other measures intended to trap sediment shall be constructed as a first step in any land-disturbing activity and shall be made functional before upslope land disturbance takes place.
- Stabilization measures shall be applied to earthen structures such as dams, dikes and diversions immediately after installation.
- Sediment traps and sediment basins shall be designed and constructed based upon the total drainage area to be served by the trap or basin.
 - The minimum storage capacity of a sediment trap shall be 134 cubic yards per acre of drainage area and the trap shall only control drainage areas less than three acres.
 - Surface runoff from disturbed areas that is comprised of flow from drainage areas greater than or equal to three acres shall be controlled by a sediment basin. The minimum storage capacity of a sediment basin shall be 134 cubic yards per acre of drainage area. The outfall system shall, at a minimum, maintain the structural integrity of the basin during a 25-year storm of 24-hour duration. Runoff coefficients used in runoff calculations shall correspond to a bare earth condition or those conditions expected to exist while the sediment basin is utilized.
 - Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes that are found to be eroding excessively within one year of permanent stabilization shall be provided with additional slope stabilizing measures until the problem is corrected.
 - Concentrated runoff shall not flow down cut or fill slopes unless contained within an adequate temporary or permanent channel, flume or slope drain structure.
 - Whenever water seeps from a slope face, adequate drainage or other protection shall be provided.
- All storm sewer inlets that are made operable during construction shall be protected so that sediment-laden water cannot enter the conveyance system without first being filtered or otherwise treated to remove sediment.
- Before newly constructed stormwater conveyance channels or pipes are made operational, adequate outlet protection and any required temporary or permanent channel lining shall be installed in both the conveyance channel and receiving channel.
- When work in a live watercourse is performed, precautions shall be taken to minimize encroachment, control sediment transport and stabilize the work area to the greatest extent possible during construction. Nonerodible material shall be used for the construction of causeways and cofferdams. Earthen fill may be used for these structures if armored by nonerodible cover materials.
- When a live watercourse must be crossed by construction vehicles more than twice in any six-month period, a temporary vehicular stream crossing constructed of nonerodible material shall be provided.
- All applicable federal, state and local chapters pertaining to working in or crossing live watercourses shall be met.
- The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse is completed.
- Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:
 - No more than 500 linear feet of trench may be opened at one time.
 - Excavated material shall be placed on the uphill side of trenches.
 - Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property.
 - Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization.
 - Restabilization shall be accomplished in accordance with this chapter.
- Applicable safety chapters shall be complied with.
- Where construction vehicle access routes intersect paved or public roads, provisions shall be made to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or public road surface, the road surface shall be cleaned thoroughly at the end of each day. Sediment shall be removed from the roads by shoveling or sweeping and transported to a sediment control disposal area. Street washing shall be allowed only after sediment is removed in this manner. This provision shall apply to individual development lots as well as to larger land-disturbing activities.
- All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization or after the temporary measures are no longer needed, unless otherwise authorized by the local program authority. Trapped sediment and the disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion and sedimentation.
- Properties and waterways downstream from development sites shall be protected from sediment deposition, erosion and damage due to increases in volume, velocity and peak flow rate of stormwater runoff for the stated frequency storm of 24-hour duration in accordance with the following standards and criteria:
 - Concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.
 - Adequacy of all channels and pipes shall be verified in the following manner:
 - The applicant shall demonstrate that the total drainage area to the point of analysis within the channel is one hundred times greater than the contributing drainage area of the project in question; or
 - (2)(a) Natural channels shall be analyzed by the use of a two-year storm to verify that stormwater will not overtop channel banks nor cause erosion of channel bed or banks.
 - All previously constructed man-made channels shall be analyzed by the use of a ten-year storm to verify that stormwater will not overtop its banks and by the use of a two-year storm to demonstrate that stormwater will not cause erosion of channel bed or banks; and
 - (c) Pipes and storm sewer systems shall be analyzed by the use of a ten-year storm to verify that stormwater will be contained within the pipe or system.
 - If existing natural receiving channels or previously constructed man-made channels or pipes are not adequate, the applicant shall:
 - Improve the channels to a condition where a ten-year storm will not overtop the banks and a two-year storm will not cause erosion to channel the bed or banks; or
 - Improve the pipe or pipe system to a condition where the ten-year storm is contained within the appurtenances;
 - Develop a site design that will not cause the pre-development peak runoff rate from a two-year storm to increase when runoff outfalls into a natural channel or will not cause the pre-development peak runoff rate from a ten-year storm to increase when runoff outfalls into a man-made channel; or
 - Provide a combination of channel improvement, stormwater detention or other measures which is satisfactory to the plan approving authority to prevent downstream erosion.
 - The applicant shall provide evidence of permission to make the improvements.
 - All hydrologic analyses shall be based on the existing watershed characteristics and the ultimate development condition of the subject project.
 - If the applicant chooses an option that includes stormwater detention, he shall obtain approval from the locality of a plan for maintenance of the detention facilities. The plan shall set forth the maintenance requirements of the facility and the person responsible for performing the maintenance.
 - Outfall from a detention facility shall be discharged to a receiving channel, and energy dissipators shall be placed at the outfall of all detention facilities as necessary to provide a stabilized transition from the facility to the receiving channel.
 - All on-site measures must be verified to be adequate.
 - Increased volumes of sheet flows that may cause erosion or sedimentation on adjacent property shall be diverted to a stable outlet, adequate channel, pipe or pipe system, or to a detention facility.
 - In applying these stormwater management criteria, individual lots or parcels in a residential, commercial or industrial development shall not be considered to be separate development projects. Instead, the development, as a whole, shall be considered to be a single development project. Hydrologic parameters that reflect the ultimate development condition shall be used in all engineering calculations.
 - All measures used to protect properties and waterways shall be employed in a manner which minimizes impacts on the physical, chemical and biological integrity of rivers, streams and other waters of the state.

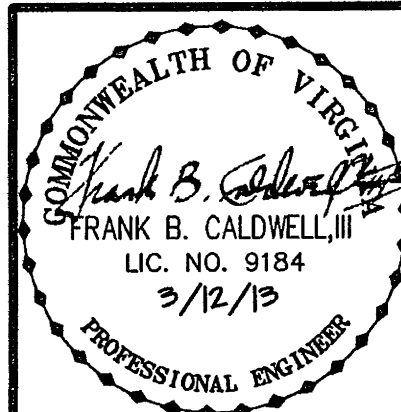
MEASURES PROVIDED per VESCH MINIMUM STANDARDS

STD. NO.	TEMPORARY AND PERMANENT STABILIZATION PRACTICES INDICATED ON PLANSSEED SPECIFICATIONS AND LIMITS OF GRADING ARE SHOWN.	STD. NO.	OUTLET PROTECTIONN/A
MS-1	TEMPORARY AND PERMANENT STABILIZATION PRACTICES INDICATED ON PLANSSEED SPECIFICATIONS AND LIMITS OF GRADING ARE SHOWN.	MS-11	LIVE WATERCOURSE IMPACTSN/A
MS-2	STOCKPILE STABILIZATIONN/A	MS-12	TEMPORARY VEHICULAR STREAM CROSSINGSN/A
MS-3	PERMANENT STABILIZATIONINDICATED FOR ALL AREAS NOT OTHERWISE STABILIZED.	MS-13	OTHER REGULATIONS REGARDING LIVE WATERCOURSESALL FEDERAL, STATE AND LOCAL REQUIREMENTS WILL BE MET PRIOR TO CONSTRUCTION.
MS-4	INSTALLATION OF E&S MEASURES AS FIRST STEP IN LAND DISTURBING ACTIVITIESNOTED ON THIS SHEET, NOTE ES-3.	MS-14	STABILIZATION OF BED AND BANKS OF DISTURBED WATERCOURSESN/A
MS-5	EARTHEN CONTROLS STABILIZATIONN/A	MS-15	UTILITY INSTALLATIONSEROSION CONTROL MEASURES ARE INDICATED AS REQUIRED.
MS-6	SEDIMENT BASINS & TRAPSN/A	MS-16	CONSTRUCTION ENTRANCE MAINTENANCEUTILITY LINE WORK ADJACENT TO RIGHT OF WAY THEREFORE NOT APPLICABLE
MS-7	SLOPE EROSION MINIMIZATIONN/A	MS-17	REMOVAL OF TEMPORARY MEASURESNOTE 5, 'ADDITIONAL EROSION AND SEDIMENT CONTROL NOTES', THIS SHEET.
MS-8	CHANNELIZATION OF CONCENTRATED FLOW DOWN SLOPESN/A	MS-18	STORMWATER MANAGEMENTNO STORM WATER FACILITIES ARE REQUIRED FOR THIS PROJECT.
MS-9	SLOPE SEEPAGE PROTECTIONN/A		
MS-10	INLET PROTECTIONINDICATED AT APPROPRIATE INLETS		

(PS) PERMANENT SEEDING MIXTURE
REFERENCE THE VA. EROSION AND SEDIMENT CONTROL HANDBOOK SECTION 3.32 FOR SEED TYPES, APPLICATION RATES, DATES OF APPLICATION ETC. OF PERMANENT SEEDING MIXTURES. ALL DISTURBED AREAS SHALL BE PERMANENTLY SEEDING WITHIN SEVEN (7) DAYS OF ACHIEVING FINAL GRADE, OR ON DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE WITHIN ONE YEAR.

(TS) TEMPORARY SEEDING
REFERENCE THE VA. EROSION AND SEDIMENT CONTROL HANDBOOK SECTION 3.31 FOR SEED TYPES, APPLICATION RATES, DATES OF APPLICATION ETC. OF TEMPORARY SEEDING MIXTURES. ALL DISTURBED AREAS NOT BEING DISTURBED FOR MORE THAN 30 DAYS SHALL RECEIVE TEMPORARY SEEDING.

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Designed: J.W.K.
Drawn: J.V.Judy
Checked: F.B.C.
Date: 01/26/10
Revised: 03/12/13
Tax Parcel: As Shown
N.B. No.: Carilion #11
W.Q. No.: 09-0070

EROSION & SEDIMENT CONTROL
NOTES AND DETAILS
FOR THE WESTERN VA. WATER AUTHORITY
1700 JEFFERSON STREET
SEWER PROJECT
SITUATE SOUTH JEFFERSON STREET
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